

Prof. Dr.-Ing. Steffen Ihlenfeldt

Chair of Machine Tools Development and Adaptive Controls since 2015.

Director at the Fraunhofer Institute for Machine Tools and Forming Technology IWU since 2021, Head of the Department of Cyber-Physical Production Systems (CPPS) at the IWU and corporate member of CIRP.

Date of birth: July 29th, 1971

Place of birth: Aschersleben

Professional experience

- 2021 – present Director, Fraunhofer IWU, Chemnitz
- 2018 – present Member of the German Academic Association for Production Technology – WGP
- 2016 – present Head of Department, Fraunhofer IWU, Dresden, Department for Cyber-Physical Production Systems (CPPS)
- 2015 – present Professor, Technische Universität Dresden, Chair of Machine Tool Development and Adaptive Controls at the Institute of Machine Tools and Control Engineering
- 2012 Doctorate as Dr.-Ing. at the TU Chemnitz
- 2010 – 2015 Head of Department, Fraunhofer IWU, Chemnitz, Department of Machine Tools
- 2008 – 2010 Acting Head of Department, Fraunhofer IWU, Chemnitz, Department of Machine Tools
- 2000 – 2010 Group leader, Fraunhofer IWU, Chemnitz, research group Machine Structures at the Department for Machine Tools
- 1997 – 1999 Research Associate, Fraunhofer IWU, Chemnitz, Department for Machine Tools
- 1991 – 1997 Study of Mechanical Engineering at the TU Braunschweig, degree: Dipl.-Ing.
- 1988 – 1990 Extended secondary school Aschersleben, degree: A-levels
- 1982 – 1988 General polytechnic secondary school in Aschersleben
- 1978 – 1982 Embassy School of the GDR in Tokyo, Japan

Research interests

Development of machine tools and adaptive controls, modeling, simulation

Selected scientific activities

- 2016 – present local coordinator of TRR 96 “Thermo-Energetic Design of Machine Tools”
- 2011 – present scientific coordination of the workgroup „demonstrators“ as a part of DFG TRR 96 Thermo-Energetic Design of Machine Tools
- 2011 – present coordination of the research project „Production engineering for wind energy“ as a part of the Fraunhofer ICON project „Strategic research co-operation on sustainable energy technologies”
- 2012 – 2015 coordination of EU project “IMain – A novel decision support system for intelligent maintenance”

Current and past funding

- 2017 – present “Robust and thermo-energetically optimized temperature control of machine tool frames by means of fluid power systems”
- 2017 – present “Fundamental analysis of the modal control applied to over-actuated machine tools”
- 2016 – present “Measurement and evaluation of the volumetric accuracy of multi-axis machine tools under operational conditions”
- 2011 – present „Identification of environment parameters for thermo-elastic models and correction algorithms based on high-dimensional characteristic diagrams”
- 2011 – present “Micro structure and run-in process influence on friction and wear intensity in the cam-tappet tribo-system including integral process and surface structuring developments”
- 2012 – 2015 “IMain – A novel decision support system for intelligent maintenance”
- 2008 – 2012 Innovation Alliance “Green Carbody Technologies” (InnoCaT)“
- 2000 – 2003 “MACH21 - Multipurpose and cross-sectorial modernization of manufacturing processes through parallel kinematics”

Dresden, 29 January 2021

Ten most important publications

1. Law, Mohit ; Rentzsch, Hendrik ; Ihlenfeldt, Steffen ; Putz, Matthias: Application of substructure decoupling techniques to predict mobile machine tool dynamics: Numerical investigations. In: Procedia CIRP 46 (2016), S.537-540 (DOI: <http://dx.doi.org/10.1016/j.procir.2016.04.126>)
2. Putz, Matthias ; Ihlenfeldt, Steffen ; Karaguzel, Umut ; Semmler, Ulrich ; Budak, Erhan ; Bakkal, Mustafa ; Wertheim, Rafael: Improving performance of turn-milling by controlling forces and thermally induced tool-center point (TCP) displacement. In: Procedia CIRP 40 (2016), S.481-485 (DOI: <http://dx.doi.org/10.1016/j.procir.2016.01.107>)
3. Schneider, Matti ; Kabel, Matthias ; Andrä, Heiko ; Hauptmann, Marek ; Majschak, Jens-Peter ; Penter, Lars ; Hardtmann, A. ; Ihlenfeldt, Steffen ; Westerteiger, R. ; Glatt, E. ; Wiegmann, Andreas: Thermal fiber orientation tensors for digital paper physics. In: International Journal of Solids and Structures 100-101 (2016), S.234-244 (DOI: <http://dx.doi.org/10.1016/j.ijsolstr.2016.08.020>)
4. Law, Mohit ; Wabner, Markus ; Colditz, André ; Kolouch, Martin ; Noack, Steffen ; Ihlenfeldt, Steffen: Active vibration isolation of machine tools using an electro-hydraulic actuator. In: CIRP Journal of Manufacturing Science and Technology 10 (2015), S.36-48 (DOI: <http://dx.doi.org/10.1016/j.cirpj.2015.05.005>)
5. Law, Mohit ; Ihlenfeldt, Steffen: A frequency-based substructuring approach to efficiently model position-dependent dynamics in machine tools. In: Proceedings of the Institution of Mechanical Engineers. Part K, Journal of multi-body dynamics 229 (2015), Nr.3, S.304-317 (DOI: <http://dx.doi.org/10.1177/1464419314562264>)
6. Rehm, Matthias ; Ihlenfeldt, Steffen ; Schlegel, Holger ; Drossel, Welf-Guntram: Mechanically coupled high dynamic linear motors - a new design approach and its control strategy. In: CIRP Annals. Manufacturing Technology 63 (2014), Nr.1, S.381-384 (DOI: <http://dx.doi.org/10.1016/j.cirp.2014.03.135>)
7. Pürzel, Franziska ; Eiselt, Toni ; Weidlich, Dieter ; Ihlenfeldt, Steffen ; Gröger, Sophie ; Zickner, Holger ; Wittstock, Volker: Intuitivere Produkt-FMEA mittels Virtual Reality. In: Zeitschrift für wirtschaftlichen Fabrikbetrieb : ZWF 108 (2013), Nr.4, S.215-219
8. Uriarte, L. ; Zatarain, M. ; Axinte, D. ; Yagüe-Fabra, J. ; Ihlenfeldt, Steffen ; Eguia, J. ; Olarra, A.: Machine tools for large parts. In: CIRP Annals. Manufacturing Technology 62 (2013), Nr.2, S.731-750 (DOI: <http://dx.doi.org/10.1016/j.cirp.2013.05.009>)

9. Law, M. ; Ihlenfeldt, Steffen ; Wabner, Markus ; Altintas, Yusuf ; Neugebauer, Reimund: Position-dependent dynamics and stability of serial-parallel kinematic machines. In: CIRP Annals. Manufacturing Technology 62 (2013), Nr.1, S.375-378 (DOI: <http://dx.doi.org/10.1016/j.cirp.2013.03.134>)

10. Wertheim, Rafael ; Ben-Hanan, Uri ; Ihlenfeldt, Steffen ; Stoll, Andrea ; Treppe, Frank ; Wabner, Markus: Acoustic emission for controlling drill position in fiber-reinforced plastic and metal stacks. In: CIRP Annals. Manufacturing Technology 61 (2012), Nr.1, S.75-78 (DOI: <http://dx.doi.org/10.1016/j.cirp.2012.03.003>)

Selected Patents

1. Wabner, Markus ; Ihlenfeldt, Steffen: Aufstellelement. Priorität: DE 102012010196 A1
2. Wabner, Markus ; Ihlenfeldt, Steffen: Federeinrichtung mit stufenlos einstellbarer Federsteifigkeit. DE 102012008841 A1:
3. Wabner, Markus ; Ihlenfeldt, Steffen: Festklopfvorrichtung. DE 102012010218 A1
4. Priber, U. ; Ihlenfeldt, S.: Einrichtung und Verfahren zur Positions- und Lageermittlung. DE 102009021483 A
5. Roscher, H.J. ; Drossel, W. ; Ihlenfeldt, S. ; Schwaar, M.: Vorrichtung zum Abstützen eines Trägers. DE 10156491 B4
6. Ihlenfeldt, S. ; Weidemann, F. ; Neugebauer, R. ; Lasch, T.: Bewegungs- und/oder Positioniervorrichtung. DE 10211055 A1